performing the aggregation prior to the join only if a determination is made that it is optimal to perform an aggregation prior to the join.

REMARKS

Applicant respectfully requests reconsideration and allowance of the subject application. No claims are amended, added or canceled. Claims 1-26 are pending in this application.

35 U.S.C. § 102

Claims 1, 8, 9, 11, 12, 17, 19, 21 and 24

Claims 1, 8, 9, 11, 12, 17, 19, 21 and 24 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Number 5,781,896 issued to Dalal (hereinafter "Dalal"). Applicant respectfully traverses the rejection.

Claim 1 recites "a method for processing a database query," comprising: "partially pre-aggregating records in a database according to a single grouping column" "to provide a result that contains at least two records having like grouping column values." Claim 1 also recites the step of "aggregating records derived from the partial pre-aggregation to provide a result that contains records having unique grouping column values."

Partial aggregation is defined in the specification (p. 15):

> [T]he output stream from pre-aggregation may contain multiple records related to the same customer, each one covering a subset of that customer's invoices. Traditional, complete aggregation always outputs a single record for each customer. This is the difference between *partial* pre-aggregation and pre-aggregation.

A partial aggregation (or pre-aggregation as used in the example) is an incomplete aggregation, so to speak, that may be performed as a preliminary step

in a database query. Normally after an aggregation is completed, no two records contain a grouping column value that is the same as the grouping column value of another record.

It is Applicant's assertion that the Dalal reference does not disclose or anticipate such a scheme.

The Office Action, in response to Applicant's previous arguments (see Heading 6.) states that "multiple aggregation query in Dalal is a query that utilized more than one grouping column, aggregating one grouping column at a time, sequentially – this is clearly partial aggregation (citation omitted).

The precise words of the Examiner's statement lend credence to Applicant's argument that multiple-level aggregation is not partial aggregation. Dalal does disclose a scheme in which aggregation of one grouping column at a time is shown. A first grouping column ("Salesperson") is aggregated completely (see Fig. 11), i.e. there are no two identical grouping column values in the grouping column of the aggregation result. Then, a second grouping column ("Division") is aggregated completely, i.e. there are no two "Division" values that are identical.

Dalal does *not* disclose or anticipate only *partially* aggregating each grouping column. The examples shown and described in Dalal clearly indicate that a full aggregation is performed on the grouping columns because after each aggregation, each grouping column value in the grouping column that was aggregation is unique, i.e. no two grouping column values are alike.

If the example shown in Dalal is applied to claim 1, then a first partial pre-aggregation on the "Salesperson" grouping column would produce a result that contained non-unique grouping column values. Then the first aggregation

referenced above would be performed on the partial pre-aggregation result, so that each grouping column value was unique in the final result.

Then, a second partial pre-aggregation on the "Division" grouping column would produce a result that contained non-unique grouping column values. Then the second aggregation referenced above would be performed on the partial pre-aggregation result, so that each grouping column value was unique in the final result.

In summary, the multiple-level aggregation disclosed in Dalal is not partial aggregation. As a matter of logic, the aggregations included in the multiple-level aggregation have to be performed sequentially. However, this does not amount to the partial pre-aggregation that is required by claim 1.

Accordingly, claim 1 is not anticipated by Dalal and is allowable over the cited reference. The rejection, therefore, should be withdrawn.

Claims 8, 9 and 11 depend from claim 1 and are allowable by virtue of that dependency.

Claim 12 recites a relational database system that includes, *inter alia*, a record store and a query processor configured "to process a query on the record store according to a single grouping column, the query processor being configured to partially pre-aggregate the record store to provide a result that contains at least two data records that have like grouping column values."

As previously discussed in the response to the rejection of claim 1, a typical aggregation does not result in any two records having an identical grouping column value as required by claim 12. The operations referred to in Dalal are sequential aggregations - one follows the other. But these sequential aggregations are two independent, complete aggregations – neither of the sequential

aggregations is a partial aggregations. Therefore, Dalal does not disclose or anticipate a partial aggregation or partial pre-aggregation.

Accordingly, claim 12 is allowable over the cited reference and the rejection thereof should be withdrawn.

Claims 17 and 19 depend from claim 12 and are allowably at least by the same reasoning discussed in the response to the rejection of claim 12. Therefore, the rejection of claims 17 and 19 should also be withdrawn.

Claim 21 recites a relational database computer program that comprises "partial pre-aggregation code to partially pre-aggregate data records according to grouping column values in a single grouping column to provide a partial pre-aggregation result having two or more records having like grouping column values." The relational database computer program also includes "aggregation code" that aggregates the result of the partial pre-aggregation.

As previously discussed, Dalal merely discloses a multiple level aggregation that does not include partial aggregation. Therefore, Dalal does not disclose or anticipate a partial pre-aggregation operation as required in claim 21. .

Accordingly, claim 21 is allowable over the cited references and the rejection of claim 21 should be withdrawn.

Claim 24 recites a relational database computer program comprising computer-executable instructions that perform several steps. The steps include "aggregating the input records in the stream according to a single grouping column" to create a record store, "joining records in the record store with other data," outputting the records from the join and aggregating the records output from the join. Claim 24 also makes clear that "the records output from the join include at least two records that have an identical grouping column value in the single

grouping column." This restriction, in essence, renders the first aggregating step a partial aggregation.

As previously discussed, the cited reference only describes an aggregation or a multiple level aggregation, wherein no records output from an aggregation contain an identical value in the grouping column. The identical values cited in the Office Action are contained in a grouping column on which the aggregation was not performed. The operations disclosed in Dalal are merely typical aggregations that completely aggregate records on a grouping column so that no record resulting from the aggregation contains an identical value in the aggregated grouping column. This is contrary to claim 24. After a first complete aggregation is performed, a second complete aggregation is performed on another grouping column.

Claim 24 clearly recited a partial aggregation that is not disclosed in any reference. As a result, claim 24 is allowable over Dalal and the rejection thereof should be withdrawn.

35 U.S.C. § 103(a)

<u>Claims 2-5, 13-15, 20, 22, 23 and 25</u>

Claims 2-5, 13-15, 20, 22, 23 and 25 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dalal in view of U.S. Patent Number 6,115,705 issued to Larson (hereinafter "Larson"). Applicant respectfully traverses the rejection.

Claims 2-5 depend from claim 1 and are allowable at least by virtue of that dependency for the reasons stated in the response to the rejection of claim 1. Neither reference teaches or suggests a partial aggregation or partial pre-aggregation. As discussed above, this makes the claims allowable over the cited references and the rejection of these claims should be withdrawn.

Version of Amended Claims With Markings to Show Changes Made

No claims are amended.

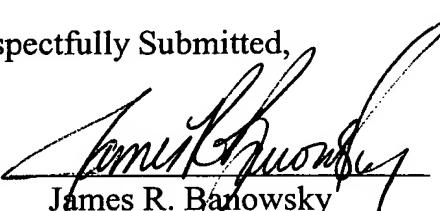## Conclusion

All pending claims 1-26 are in condition for allowance. Applicant respectfully requests reconsideration and prompt issuance of the subject application. **If any issues remain that prevent issuance of this application, the Examiner is urged to contact the undersigned attorney before issuing a subsequent Action.**

Respectfully Submitted,

Date: 3/12/03

By: _____
James R. Banowsky
Reg. No. 37,773
(509) 324-9256x16